

A process for the purification or fractionation of aqueous soluble polymers using an aqueous two-phase system is described. The concentrations of the polymer to be fractionated and of an aqueous soluble salt, and the temperature of the aqueous fractionation medium are adjusted so that two phases form, the lower molecular weight polymer molecules partition into the high salt concentration phase, and the higher molecular weight polymer molecules partition into the low salt concentration phase. The resulting high molecular weight polymers are characterized by a higher average molecular weight and a narrower molecular weight distribution and decreased unsaturation than the unfractionated polymers. After being subjected to the fractionation process, polyol polymers that form hydrogels in aqueous solution exhibited higher viscosities and a liquid to gel transition over a narrower temperature range than the unfractionated polyol polymers.